DOCUMENT RESUME

ED 347 952 HE 025 717

AUTHOR Valerio, Nina Morena L.
TITLE Medical Residents' Beliefs and Actions: Implications for Clinical Teaching during Work Rounds.
PUB DATE 23 Apr 92
NOTE 35p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 20-24, 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Beliefs; *Clinical Teaching (Health Professions); Educational Experience; *Graduate Medical Education; *Graduate Medical Students; Higher Education; Student Attitudes; Teaching Methods

ABSTRACT

A study was done to examine the relationships between medical residents' beliefs about their clinical teaching roles and their teaching behaviors within the context of work rounds. The research was conceptually based on theories of symbolic interactionism and reasoned action. Fourteen residents in general internal medicine, representing four residency levels, participated in the study. Qualitative and quantitative research approaches were used. Data were derived from documents, interviews, and direct observations. The analysis revealed: (1) that there were five dimensions of residents' beliefs (patient care tasks, academic, social, contextual, and personal); (2) that there was congruence between the residents' teaching role beliefs and teaching behaviors during work rounds; (3) that the residents' had implicit rules of educational practice, generated from their explicit expressions of concerns; and (4) that the residents' clinical training experiences were the primary source of their belief systems and actions. A conceptual model describes the reciprocal interactions between residents' beliefs and actions as they strive to teach and learn within the clinical arena. Finally, implications for residency training and future research are drawn from the emergent results of the study. Included are seven tables, data and information on the instruments in four appendixes, and 44 references. (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Medical Residents' Beliefs and Actions: Implications for Clinical Teaching during Work Rounds

ED347952

Nina Morena L. Valerio, Ph.D.

Interdisciplinary Graduate Programs

University of Washington

Seattle, WA 98195

Paper presented at the 1992 Annual Conference of the

American Educational Research Association (AERA)

San Francisco, CA

April 23, 1992

HE 025 717

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Nina L. Valerio

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

Abstract

This study examined the relationships between medical residents' beliefs about their clinical teaching roles and their teaching behaviors within the context of work rounds. The theories of symbolic interactionism and reasoned action guided the conceptual framework of this investigation. Fourteen residents in general internal medicine, representing four residency levels, participated in the study. Qualitative and quantitative research approaches were used. Data were derived from documents, interviews and direct observations. The data analysis revealed: (a) five dimensions of residents' beliefs--patient care task, academic, social, contextual and personal ; (b) congruence between the residents' teaching role beliefs and teaching behaviors during work rounds; (c) the residents' implicit rules of educational practice, generated from their explicit expressions of concerns, and (d) the residents' clinical training experiences as the primary source of their belief systems and actions. A conceptual model describes the reciprocal interactions between residents' beliefs and actions as they strive to teach and learn within the clinical arena. Finally, implications for residency training and future research are drawn from the emergent results of the study.

Medical Residents' Beliefs and Actions: Implications for Clinical Teaching during Work Rounds[1]

What do medical residents believe about their role in clinical teaching, and to what extent do these beliefs influence their teaching behaviors? These are important questions to examine since residents are increasingly charged with the teaching of medical students and each other in the clinical setting (e.g., Sodeman, et. al., 1977; Tonesk, 1979; Jewett, et. al., 1982; Sox, et. al., 1984; Greenberg, et. al., 1984; Wilkerson, et. al., 1986; Tremonti & Biddle, 1987). As novice teachers, residents develop their instructional conceptions and skills as they progress through their daily training experiences. Since teacher beliefs are known to guide and regulate pedagogical decisions and actions (Shavelson, 1973; Clark, 1980; Shavelson & Stern. 1981; Munby, 1982; Clark & Peterson, 1986), the construction of resident beliefs and how these beliefs may influence their decisions and actions in the clinical setting are important areas of investigation. This study explored the beliefs of medical residents about their teaching roles and the relationships of these beliefs to their teaching behaviors within the context of work rounds.

The theoretical orientations that directed this study were the theory of symbolic interaction (Mead, 1934; Blumer, 1969) and the theory of reasoned action (Ajzen & Fishbein, 1980). These theories postulate that individuals are reflective and adaptive human beings, who actively conceive, process and use information in a reasoned fashion in the course of coping with the demands of their environment. Specifically, the theory of symbolic interaction posits that individuals construct their social worlds out of social interaction through a continual reflective thinking process of interpreting and assigning socially derived meanings to their personal experiences. Accordingly, social life is a symbolic construction. Hence, the term symbolic interactionism. Viewed from the symbolic interaction perspective, residents construct their self-definitions and social understandings of their medical world through a process of reflective interpretations, and assignments of meanings to their clinical experiences. They share these meanings, and these shared meanings become in part, the residents' beliefs about their teaching roles. These beliefs, in turn, serve to guide and regulate their teaching decisions and actions within the clinical arena. Moreover, these beliefs and actions serve as their frames of reference as they elaborate on their socially constructed reality.

---

1 This paper is based on my doctoral dissertation: Medical Residents' Belief Systems about their Clinical Teaching Roles and these Systems' Relationships to their Clinical Teaching Behaviors: A Qualitative Inquiry. (1991). University of Washington, Seattle:WA 98195.

The theory of reasoned action focuses on the interdependent relationships between beliefs, attitudes, intentions and behaviors. It posits that beliefs determine social behaviors. Three of its major premises are: (a) beliefs play a central role in the formation of attitudes; (b) individuals consider the implications of their actions before they make the decision to engage or to not engage in a given behavior, and (c) beliefs result from individuals' direct observations, self-generated inferences, or perceived social pressures from their important others. Hence, the term reasoned action. When viewed from the reasoned action perspective, the teaching behaviors of residents can be traced back to their pre-existing beliefs about the outcomes of their anticipated teaching behaviors, to their attitudes about their clinical teaching roles, and to the perceived consequences of their social interactions with their important others in the clinical setting (e.g., patients, attendings, other residents, medical students).

These two theories led to the following propositions for this study. First, residents are self-reflective individuals who conceive, process and use information about themselves and their social world in order to cope with the expectations of their clinical environment. Second, based on their self-reflections and social interactions with their important others in the clinical setting, residents share similar organizational experiences upon which they reflect and interpret, and to which they assign meanings. Third, through this reflective process of interpreting and assigning meanings, they develop personal and shared perspectives of their teaching roles and teaching behaviors. Fourth, these perspectives--which constitute the residents' beliefs--serve to guide their teaching decisions and actions as they attempt to cope with the expectations of their medical world within the context of work rounds. Lastly, their beliefs stem from a variety of sources: their personal observations, their inferences, and their acceptance of certain information from important others with whom they interact during work rounds. It follows that in order to adequately explain and understand the residents' world as clinical educators, we need to begin with an examination of their beliefs about their teaching roles.

Two major questions guided this study: *What are the belief systems that medical residents hold about their clinical teaching roles, and what is the significance of these beliefs in their clinical teaching context*? This study focused on the patterns of commonalities and differences among the residents' beliefs, and the congruence between their teaching role beliefs and teaching behaviors. In this study, belief systems was defined as the residents' personally-held perspectives (implicit personal understandings and shared meanings with their important others) about the different components of the clinical teaching-learning environment and their interrelationships. These

components included: clinical teaching roles, work rounds' purposes, instructional goals, learner characteristics, principles of effective clinical teaching or rules of educational practice, sources of their beliefs.

Methodology

Research Design: The multiple case study research design, complemented by factor analysis and descriptive statistics, was the research framework for this study (Yin, 1984). This framework involved the interdependent levels of qualitative description and abstraction (Philipsen, 1982). Hence, both the *emic* (the informant's individual construction of reality that is voluntarily shared with the researcher) and the *etic* (the researcher's own interpretations of the informant's construction of his/her social world) modes of inquiry were used. Both points of view must be taken into account since the researcher cannot totally rely on the *emic* view since the informants in the study may not be aware of their own patterns of beliefs and behaviors (Lincoln & Guba, 1985; Hammill, 1987).

Four case groups of medical residents were used. There were four individual cases per case group (residency level), except at the fourth-year level which had only two cases. Each case group represented a level of the unit of analysis (a sub-unit), with the individual resident as the main unit of analysis. Every case (the individual resident or each resident group) served a replication purpose, allowing the use of both within-case group analysis and cross-case group analysis of findings (Yin, 1984).

Sample: A residency training program in general internal medicine, from a northwestern school of medicine at a large research university, provided a target population of 125 residents for this study. Of this population, 51 (41%) were first-year residents; 32 (26%) were second-year residents; 37 (29%) were third-year residents, and 5 (4%) were fourth-year residents; 71 (57%) were males and 54 (43%) were females; with a mean age of 30 years. A letter of invitation was sent to all residents to participate in the study. The response rate was 33.6% (n=42). From the pool of 42, four residents were randomly selected from each residency level with the exception of the R4 level (both respondents were included) (Tuckman, 1978). This resulted in the selection of 14 residents (eight males and six females; R1 to R4 levels) who served as the sample for this study.[2].

---

[2] R1s=residents in their first-year of training (interns); R2s=second-year residents; R3s=third-year residents; R4s=fourth-year residents. All residents are also addressed as housestaff or house officers.

For the observation phase, judgment and purposive sampling were used to select one resident per residency level (two males and two females; R1 to R4) (Honigman, 1970; Patton, 1980; Lincoln & Guba, 1985). The focus on four distinct residency levels facilitated the emergence of similarities and differences in the residents' clinical teaching experiences, patient care responsibilities, and belief systems. This multiple sampling approach allowed me (a) to select the kinds and ranks of participants needed in the study while establishing sample boundaries for a systematic management of its data collection and analysis phases, and (b) to serve the purposes of the study for maximum variation, extreme/critical cases and convenience (Patton, 1980, p. 102). The sample (n=14) were characterized by: age (M=30); gender (M=57%, F=43%); residency training tracks (Traditional=71%, Primary Care=29%), and career goals (Academic Medicine=79%; Private Practice=14%; Academic Medicine with Private Practice=7%). The sample was representative of both the target population of 125 residents, and the respondent sample pool of 42 in terms of age, gender, residency level and track choices.

Setting: The primary setting for data collection was the daily work rounds led by the residents. Work rounds aim to efficiently address the present status of each assigned patient, and to make future care plans as decided by a team (of one senior resident, two interns, two medical students and possibly other health care professionals). In sum, work rounds represent the work that the team is responsible for doing during the day. The choice of work rounds as the clinical teaching context for this study is based on these factors: (a) work rounds are led and organized by residents, rather than the attending physicians, thereby giving residents all of the teaching opportunities and responsibilities; (b) they are readily observable, and (c) they are regularly scheduled daily events. Diverse university-affiliated teaching hospitals within the city served as locations of the residents' respective clinical rotations. All interviews were held in these sites: three community medical centers, two private hospitals and one military medical center. All observations were held in these sites: two community medical centers and two private hospitals.

Procedures and Sources of Evidence: A pilot study of the research protocol was carried out, providing me with a variety of important lessons. I incorporated these lessons into the final version of the protocol to improve the reliability or dependability of the study and its overall quality (Yin, 1984; Lincoln & Guba, 1985). Three sources of evidence were used in an attempt to establish a chain of evidence that linked the data bases from which conclusions were drawn (Becker, 1954; Spradley, 1979; Philipsen, 1982; Yin, 1984; Miles & Huberman, 1984; Lincoln & Guba, 1985; Kirk & Miller, 1986; McCracken, 1988; Weinholtz, 1981, 1988). These were:

(a) documents; (b) two interviews [90 minutes to 120 minutes] with each of the 14 residents, and (c) direct observations of four residents during work rounds.

The documents consisted of the residents' biographical data and orientation materials. These were examined for the residents' demographic data, and for various kinds of information that they received during their training. Long qualitative interviews were conducted in each resident's natural clinical environment in order to elicit his/her beliefs about clinical teaching during work rounds. These interview sessions involved the use of the Repertory Grid Technique, which explored and discovered the personal meanings that residents assigned to their clinical teaching-learning experiences (Kelly, 1955; Munby, 1982, 1984; Beail, 1985). The procedures involved using a comprehensive 31-page interview protocol, with clearly defined objectives and procedural steps. A combination of structured tasks, focused and moderately focused modes of inquiry were used. During Session I, I elicited the residents' separate sets of elements and constructs. The elements refer to people, events and teaching activities that typically characterized the residents' teaching behaviors on rounds. The constructs refer to the personal meanings that residents assigned to their self-reported elements. Next, the residents rated the degree of association between each element and each construct on their repertory grids (Appendix A). The results were ratings between an axis of elements and an axis of constructs. Within seven days of the interview, the relationship between these ratings were analyzed using factor analysis. The factor analysis results (the emergent categories of constructs or extracted factors) served as the basis for the second session (Appendices B and C). During session II, I presented the resultant extracted factors to the residents, who were asked to explain and assign labels to their statistically derived constructs, and to discuss the meanings that they assigned to their conceptions of the clinical teaching-learning process, and to their teaching roles on rounds. A total of 53 audio-recorded interview hours was completed and transcribed within the last two months of the academic year.

Direct participant observations of four residents (two males and two females; R1 to R4 levels) during work rounds were conducted at four different clinical sites (two private hospitals, two community medical centers).[3] I completed a total of 20 observation periods (one to two hours per period). The instruments used were: (a) each

---

[3] R1-B, R3-B and R4-B were observed for only four, three and two periods, respectively. R1-B attended Medical Grand Rounds; R3-B and R4-B had emergency administrative duties to attend to at the time of the study. Nevertheless, their respective teams were still observed in their absence for continual data collection.

resident's element axis; (b) an inventory developed by Wilkerson, et. al., (1986) which was based on Irby's (1978) work on clinical teaching behaviors, and (c) an observation form I developed. These instruments primarily served as sensitizing devices (Miles & Huberman, 1984). The intent was to examine the correspondence between the residents' beliefs about their teaching roles and teaching behaviors during rounds. In the final analysis, five procedural steps were carried out each observation period (five successive work rounds sessions), progressing from the grand view stage of immersion towards the more focused view of insights (Douglas, 1976). Reflective notes, impressions, questions, patterns/themes, preliminary interpretations, consistencies/inconsistencies, insights/problems were recorded for further analysis and verification during and/or immediately after each interview or observation period.

Data Analysis: The data analysis involved the use of multiple methods: (a) qualitative data analysis, (b) descriptive statistics, and (c) factor analysis. Qualitative data analysis (an on-going interactive process of simultaneous data collection and analysis once that data collection has begun), served as the guiding analytical framework of the study. It involved the use of anticipatory data reduction strategies; coding interview transcripts; abstracting patterns/categories and propositions; developing data presentation displays, and finally, within-case group and cross-case analyses (Miles & Huberman, 1984). The compositional phase of this research, that is the writing up of the findings and interpretations, began with a description of each individual case and an in-depth discussion of his/her beliefs and actions. The report then progressed to within-group comparative descriptions and discussions (14 cases), and comparative observations of four cases during rounds (R1-B, R2-B, R3-B and R4-B). Finally, the report involved cross-group comparisons (R1s versus R2s versus R3s versus R4s).

The descriptive statistics used were: means, percentages and frequencies. Together, these statistics described the sample in terms of: demographics, observational data, and summary patterns of similarities and differences.

Factor analysis was part of the Repertory Grid Technique. The terms/phrases in the resident's construct axis served as variables, while the teaching activity statements in the element axis were viewed as subjects (Munby, 1984). This step was followed by the factor extraction process (focusing on the completion of a principal components factor analysis--the simplest of factor analysis strategies--of the raw data in the grid for each resident since the data did not present preexisting hypothesis that required testing). The interrelationships between the variables served as the sole basis for the factorial structure of the data. The determination of the number of extracted factors was based on the usual practice of including only those factors that have eigenvalues greater than 1.0.

(Ferguson, 1971; Norussis, 1985). Next, varimax rotation was used to simplify the factor matrix structure thereby facilitating the interpretation of factors. Hence, the number of variables that showed high loadings on a factor were minimized, permitting the factors to be differentiated from one another. The product was a transformed matrix (the rotated factor matrix) presenting summary sets of closely related variables per factor. Coefficients/factor loadings of 0.6 or greater were chosen to represent the best estimates of the correlations between the variables that shared a strong commonalty in representing a factor. Finally, the rotated factor matrix and the percent of variance of each factor were interpreted by the residents with my assistance (Appendix B). Unloaded variables (variables not associated with any factor) were pulled and referred to the residents for their explanations and interpretations. Residents were also asked to decide whether these variables belong to any of the identified factors, or if they should stand alone to represent a new factor. These decisions were based on the premise that the residents would be in the best position to explain the existence of these variables as a reflection of their constructions of reality.

A coding system was also developed during the initial examination of each resident's emergent dimensions of beliefs and actions. Two independent judges, with doctorates in Education, coded segments of the transcribed data. Inter-judge reliability agreement was 95.5% (Agreements/Agreements and Disagreements: 21/21+1). (Borg & Gall, 1983; Miles & Huberman, 1984).

Results and Interpretations

Results of the cross-group case analysis revealed patterns of similarities and differences among the four resident groups (residency levels). Data reduction devises display the data patterns using illustrative quotes (Miles and Huberman, 1984). The results and interpretations of this study are addressed according to the residents' (a) preparatory training for clinical teaching; (b) relationships between their teaching role beliefs and teaching behaviors on work rounds, (c) dimensions of their beliefs and actions, and (d) sources of their belief systems.

Residents' Preparatory Training for their Clinical Teaching Roles

As a total group, the residents' lacked formal preparatory training (e.g., seminars or workshops) for their teaching roles. Only one R4 had "partly attended" such a training course in 1986. Typically, however, the residents' preparation was solely based on their direct observations of those above them in the residency program function as clinical educators (senior and chief residents, attending physicians). In the words of some residents:

Table 1

Residents' Preparatory Training for their Clinical Teaching Roles (CTRs)

I.D.	How did you prepare for your CTR as a medical resident?
R1s	•As an apprentice of higher level residents, (and) attendings in a limited way...observations of good role models.
R2s	•Hand me down process...hit and miss through positive and negative role models...observing senior and chief residents, sometimes attendings and choosing what worked for me.
R3s	•Observing good versus bad senior residents and attendings...positive and negative (role) models...hand me down (process).
R4s	•Observing...learning from both positive and negative role models.

Since 13 out of 14 residents were planning a career in academic medicine, this finding stressed the (a) residents' need for formalized assistance in preparing for a clinical teaching career, and (b) the need to closely examine how role modeling (as a teaching strategy) impacts their training process.

Beliefs about Clinical Roles and Teaching Behaviors

Patterns of beliefs among the four levels of residents emerged from the data. Each level had a distinct conception of its clinical role on work rounds and the responsibilities involved in meeting the dual purposes of rounds: patient care delivery (primary) and clinical teaching (secondary). For the R1s, their role entailed serving concurrently as the team's primary caregivers ("gofers, errand boys/girls, scut workers, apprentices"); as learners of medical practice ("the nuts and bolts of direct patient care"), and as medical students' (MSs) immediate supervisors (responsible for "practical teaching" activities outside of rounds). For both R2s and R3s, they had parallel clinical roles. These roles entailed serving concurrently as team leaders (primary role) and clinical educators (secondary role) of MSs and/or R1s. As team leaders, the R2s and R3s believed that they were "in-charge of team direction, unity, morale, spirit, and motivation to get the work done well and on time". As clinical educators, they believed that their responsibilities entailed activities such as "giving teaching points, modeling acts of patient care and patient courtesy, questioning on case presentations, teaching about the science and art of physicianhood". For the R4s, their roles entailed serving concurrently as novice administrators, intermediary leaders and subsidiary clinical educators. As novice administrators and intermediary leaders, the R4s believed that their responsibilities were to function as "background players who help things go smoothly, who keep tabs on the service and nip problems in the bud, who

observe and give words of wisdom, help and a listening ear". As subsidiary clinical educators, they believed that their responsibilities were to serve as "the ones who fill the gap, patch the holes and give insights, who do subtle teaching and act as role models". All residents were in agreement with each other's role conception based on the shared meanings that they conceived and/or acquired from their personal experiences and social interactions throughout their residency experiences.

Four interesting findings came out of these data. First, the R1s did not view their practical teaching activities (e.g., "orienting MSs to the clinical sites/wards, training them how to perform specific patient care tasks like starting IVs, teaching them about survival skills") as "real or pure teaching". For them, the R2s and R3s were the ones responsible for real/pure teaching activities (settings where you "sit and listen, discuss esoteric topics like differential diagnosis, management options, and model bedside teaching skills"). The data suggest the need for R1s to have a clearer understanding and appreciation of their practical teaching activities. By making them realize early on that these activities are equally important as the R2s/R3s' real teaching activities, then, the R1s will be more likely to view their teaching roles with increased seriousness and importance. By doing so, they may discover their new awareness, and their subsequent actions will better prepare them for their prospective teaching roles at the R2 level rather than detract from it.

Second, although the R2's were no longer the lowest ranking physicians in the medical hierarchy, they still had a novice status within the system. They saw themselves as novice teaching physicians who must learn how to lead and how to teach "on-the-job" as they strived to meet the new demands of their new position. In contrast, the R3s were the more experienced senior residents who in the past two years had gained more self-confidence and more of a sense of knowing how to lead and teach on-the-job.

Third, the R2s and R3s also differed in their views about who their primary target learner group was on rounds. For the R2s, they were the MSs. For the R3s, they were both the MSs and the R1s. This difference appears to be influenced by their role status in the medical hierarchy; their clinical experiences in dealing with learner diversity, and their comfort or confidence levels in teaching others. The R2s expressed empathy for the R1s' demanding work, need for support, and respite. The R2s also felt more self-confidence in teaching MSs since they were two to three years ahead of them in their training (instead of just one year or less in relation to the R1s). Hence, R2s tended to focus on MSs as the recipients of their limited teaching efforts, while allowing R1s to focus

on completing their daily work on time. In the R3s' case, their role status provided them an additional year of teaching experience, an increased cognizance of the MSs/R1s' different levels of sophistication, and increased skills in dealing with learner diversity. Finally, these data showed that the residents' role definitions were consistent with their conceptions of each other's clinical roles. It indicated that as the residency level advanced, their beliefs about these roles became more comprehensive, integrative, and learner-centered in terms of content, examples and intent.

Observational data during rounds supported these findings. I observed marked consistencies between the residents' reported beliefs about their teaching roles and their actual teaching behaviors. For instance, R1-B (an intern) was observed to focus on the timely completion of her patient care tasks ("My job as an intern is to do the physical labor...the nuts and bolts of direct patient care...to get things done for my patients, and make sure that my MS also gets his work done for his own patients. Or else, we'll be here forever!"). R1-B's teaching behaviors were very minimal, inconsistent, unstructured, and most of the time, non-existent. These behaviors were limited to occasionally (a) asking the MS very specific recall/factual types of questions (e. g., a laboratory value, "yes or no" questions), and (b) supplementing the MS's oral case presentation "to fill the gap" (e. g., a patient's new complaint, a more current laboratory value). R1-B did not engage in asking problem-solving type of questions nor give any feedback about case presentations during or after rounds. For R1-B, real teaching activities on "esoteric topics" and evaluating MSs' clinical performances were the R-2's responsibilities, while R1-B's role was to teach the MS about "practical things like starting IVs, drawing blood, using the computer, doing paper work, finding syringes, taking the patient to x-ray". While R1-B was observed to exhibit consistent exemplary bedside physician-patient interactions, she did not involve the MS in the process when these could have been excellent learning opportunities. R1-B claimed not to always be aware of the role modeling opportunities that were available to her, and that she believed that teaching MSs about physician-patient relationships was also the senior resident's responsibility.

In the case of R3-B, consistencies between his beliefs and actions were also observed . In R3-B's view, his role as an educator on rounds was to function as a positive role model ("like my clinical heroes in medicine who taught me how to think"), and as a "devil's advocate" ("who presents two sides of an issue which seem diametrically opposed to force them to think through their management or ethical options critically, while also thinking of the patient's best interest and own desires"). R3-B was observed to function in both capacities on rounds. For instance, as a clinical hero, R3-B: (a) exuded competence and self-confidence in his impeccable appearance, professional

cadence and interactions/consultations with everyone he encountered, including private attendings; (b) openly shared current relevant medical readings with the team while also encouraging them to actively engage in self-directed learning activities ("must be committed to constantly read and take advantage of all learning opportunities to expand fund of knowledge...must be willing to take the time to share this knowledge with people who are not as far along in their training as I am"), and (c) demonstrated how to generalize from specific findings to general medical problems, how to verify clinical findings at the bedside, and how to involve the patient in his/her own care. As a devil's advocate, R3-B was observed to employ two teaching strategies: (a) group discussions on the "pros and cons of (medical) diagnostic/management options and ethical issues" and their explanations, and (b) questioning using the "Socratic method of teaching, not pimping--a way of asking questions in an antagonistic and intimidating fashion". In performing these functions, R3-B was also observed to address the R1s and the MSs differently in recognition of their different sophistication levels (in terms of medical knowledge and clinical skills). For instance, R3-B presented more exploratory or problem-solving types of questions to the MSs (to teach them "how to transfer their book knowledge to the patient's bedside"), and more factual/recall type of questions to the R1s (since he expects them "to know more pathophysiology, diagnostic and therapeutic options for they're two years ahead of MSs in medical education and experiences"). However, while R3-B exhibited exemplary teaching behaviors (particularly in integrating patient care delivery with clinical teaching), and solid recognition of role modeling as a teaching strategy, he did not have any follow-up discussions with any team member on their importance in clinical practice. R3-B also did not require them to demonstrate such role modeling behaviors for his evaluation.

Dimensions of Belief Systems and Actions

Five distinct, yet closely interdependent, dimensions of residents' beliefs and actions emerged as: patient care task, academic, social, contextual and personal dimensions (Appendix D). These categories arose from the comparative analysis of the residents' extracted factors. These factors refer to the residents' explanations of the association between their elements or specific actions on work rounds, and their constructs or specific meanings of their actions. See Appendix C for the iist of all residents' extracted factors from their respective repertory grids. Observational data showed congruence between the selected residents' teaching behaviors during rounds, and their self-reported conceptions of their respective teaching roles and responsibilities. At the core of these conceptions were the shared meanings that they assigned to the roles that medical team members must perform on rounds. These shared

meanings revealed their concerns (explicit expressions of discrepancies, needs and expectations) about the violation of their fundamental, implicit rules of educational practice (overarching principles/conceptions of clinical teaching and learning). These implicit rules reflected their perspectives on their clinical teaching roles, the clinical teaching-learning process, work rounds' purposes, learner characteristics, attending physicians' teaching roles, and the residency program's role in the preparation of residents. Taken together, these explicit concerns and implicit rules of educational practice appear to underlie the residents' beliefs and actions. Brief descriptions of the dimensions of residents' beliefs and actions, along with the accompanying illustrative exemplars, are presented here (Tables 2 to 6). Examplars are composites of entire quotations. They have been selected from one or two resident levels to represent the qualitative essence of each dimension . For a complete description, see my dissertation (Valerio, 1991).

Patient Care Task dimension focuses on the medical care decisions and actions that the team must undertake on a daily basis--individually and collectively. The goal is to complete the team's patient care responsibilities effectively and efficiently--from data collection to plan-of-action and follow-up. This dimension encompasses areas such as (a) role delineation and clarification, (b) task efficiency, routinization and effectiveness, and (c) the role modeling of leadership skills.

Table 2

The Patient Care Task Dimension

(1) Concern: Lack of formal delineation and clarification in role expectations. (R3s)

•Exemplars:

•Need to articulate well-defined role expectations at the outset of clinical rotations: "It's important to clarify who is doing what...to clarify (mutual) expectations."

•Unclear/unspoken role expectations: "Nobody tells you what they expect you to be as a resident, so you end up making up your own guidelines for yourself and your team...we get some skimpy (written) guidelines about everyone's role but they're very limited."

•Negative impact on quality of patient care: "There are no guidelines to follow (and) there are so many patients to be seen (that) there's no opportunity for the team to be thorough in their work."

•Implicit Rules of Educational Practice:

Formal delineation and clear articulation of all team members' specific roles at the outset of their clinical rotations are requisite to achieving: (a) a clear understanding of each other's role expectations; (b) team organization, task efficiency, and (c) high quality patient care.

Table 2 continued: The Patient Care Task Dimension

(2) Concern: Senior residents' inadequate skills in modeling effective leadership role. (R1s)

•Exemplars:

•Inadequate organizational skills: "some are grossly disorganized...(team's) goals not stated early in the game...must have direction in prioritizing work activities, how to use time well, how to be efficient and how to do the job well."

•Inadequate team management and supervisory skills: "incompetent as people managers...can't unite and supervise well those below them...some like to exercise ego power/authority over subordinates".

•Implicit Rules of Educational Practice:

Senior residents--as team leaders--should have the requisite management/supervisory and organizational skills to effectively (a) direct the team's goal-oriented daily patient care tasks, and (b) function as participatory leaders (not dictatorial) who can motivate all members to engage in a team approach to total patient care.

Patient care task was first and foremost in the residents' thoughts and actions on work rounds. In their united view, patient care was the primary purpose of rounds, with clinical teaching as its secondary purpose. Observational data supported this finding. With the exception of R3-B who was observed to intentionally structure rounds for both patient care and clinical instruction, the rest of the residents were observed to structure rounds mainly for patient care. This finding is consistent with what Wilkerson, et. al., (1986) found in their study.

Also, as the residency level progressed, their discussions of work round purposes--what they entailed and how to achieve them--became more comprehensive and integrative in terms of content and priorities. For instance, the R1s believed that the team's patient care task priorities were/should be task immediacy (what needs to be done now or before the day ends), and time efficiency (how to complete all tasks on time). For the R2s, these priorities should also entail team effectiveness in data collection, information exchange/transference, and maintenance (follow-up on plan of action). For both R3s and R4s, a team's efficiency and effectiveness in carrying out these priorities also required planned task routinization, team unity, and sensitivity towards patients' individual care needs/desires.

Academic dimension focuses on the integration of the two-way process of clinical teaching and learning with the task of providing optimal medical care. The desired outcome is the adequate preparation of medical residents for physicianhood. It encompasses many areas such as (a) role modeling, (b) clinical instruction approaches (e.g., questioning strategies, bedside teaching), and (c) performance evaluation--to name a few.

Table 3

The Academic Dimension

(1) Concern: Difficulty in integrating clinical teaching with patient care delivery. (R2s)

•Exemplars:

•Inability to simultaneously serve both patient care and clinical teaching purposes of work rounds: "Rounds are used mainly for work...patient care responsibilities are expected to be done first, so teaching becomes incidental...we miss out on teaching opportunities when we're incredibly busy."

•Lack of knowledge and skills to identify teaching opportunities during rounds: "I worry whether I'm teaching enough...hard to know what to teach and how to identify the chance to teach something or when to teach something...have to know what they already know (and) how to teach them."

•Instructions become highly informal, unplanned and unstructured: "Teaching is hit and miss and informally done (like) during breaks when there's not a patient care responsibility to do. It becomes limited to giving teaching points or pearls. We must know how to teach assessment and reasoning by using patients as examples, how to generalize beyond a specific patient, how to ask questions, discuss pros and cons of management...(but) we have limited exposure to excellent role models."

•Implicit Rules of Educational Practice:

Senior residents should have adequate preparation to best integrate teaching and learning activities with the provision of optimal patient care within the existing situational character of work rounds.

---

(2) Concern: Senior residents' and attendings' lack of expertise in their role modeling skills. (R4s)

•Exemplars:

•Inconsistency in modeling teaching effectiveness: "It's variable from terrible to good. They aren't all good and they all should be! Some do more teaching than others. Nothing formal is done...when it's only through role modeling that you learn how to teach, and when you'll see what kind of a physician educator you want to be."

•Inadequate skills and low self-confidence in modeling physical examinations and bedside teaching skills: "These are two tough subjects that are poorly taught here. It is mentioned year after year but nothing is done about it! Most attendings don't do much to teach them, so residents teach each other and the students when they are not fully experienced themselves for they have not done that many. Most attendings are not aware that role modeling is a way to teach these skills...it is the key to learning these skills!"

•Implicit Rules of Educational Practice: Senior residents and attendings--as clinical educators--should consistently serve as positive role models who can effectively demonstrate their physical examination and bedside teaching skills to all residents and medical students.

Forty-three percent (9) of the identified concerns/rules focused on role modeling, which stresses its importance as a powerful instructional strategy in clinical education. For the residents, these role modeling concerns/rules encompassed several areas such as: (a) leadership skills; (b) bedside teaching skills; (c) physical examination skills and (c) clinical reasoning skills. All residents reported concerns/rules that directly related to role modeling issues. The data also showed that as the residents' training level advanced, their beliefs about role modeling as a teaching strategy became more comprehensive in character.

Social dimension focuses on the team's interpersonal and professional relationships with each other, and their patients. It encompasses: (a) group dynamics, and (b) physician-patient relationships, and how these areas shape the social character of the clinical setting as a working-teaching-learning environment.

Table 4

The Social Dimension

•Concern: Inadequacies in medical residents'/attendings' effectiveness and efficiency in modeling a patient-centered orientation towards medical care. (R4s)

•Exemplars:

•Lack of awareness, motivation and skills to model overt positive physician-patient relationships:

"Many residents/attendings are not comfortable in doing interactions with the patient at the bedside like where to sit down at the bed or how to examine the patient's sore belly, for they've learned how to do them from those who are not fully experienced themselves. Most of them are not aware that role modeling is a way to teach those things...they're not interested in teaching how to do them. There are a few teams here led by residents who just walk around patients' rooms on rounds. They'll go to a patient with pneumonia and say to him, 'How are you doing today? Fine! We'll see you tomorrow.' That's it! They do rounds like that! That's what MSs and R1s see! It's important that they see residents/attendings' interactions with the patients and watch their general bedside manners to learn about efficiency and cooperative interactions with patients. Attendings should do more role modeling to everyone!"

•Implicit Rules of Educational Practice:

Senior residents and attendings must be equipped with the full awareness, the motivation and the requisite skills to effectively and efficiently model: (a) how to establish positive physician-patient relationships, stressing 'cooperative interactions' and (b) how to effectively communicate with the patients.

All resident groups were united in their view that a team's interpersonal relationships and patient relationships were critical to work rounds atmosphere. For them, this dimension involved areas such as: (a) the impact of positive or negative team interactions on their work productivity and (b) the role of positive or negative physician-patient communication (verbal/non-verbal) about involving patients in their own care.

Contextual dimension focuses on the impact of the situational character of work rounds (a) on the inclusion or exclusion of teaching activities during rounds, and (b) on the quality of medical care provided to patients. This encompasses factors such as: the volume of workload and time constraints, case complexity, and on-call policies.

Table 5

The Contextual Dimension

•Concern: Lack of genuine commitment of clinical sites to meet the educational goal of the residency training program. (R3s)

Table 5 continued: The Contextual Dimension

•Exemplars:

•Private versus general hospitals: "The patient service commitment of private hospitals has superseded the educational side of things...doing 'the work' comes first. The private physicians are not that interested in education. They're primarily or solely interested in having us work here to provide a service. In this hospital, our exposure to patients is very minimal...only in life-threatening situations."

•Time constraints and heavy workloads: "The housestaff is being delegated a larger work role...too much responsibility is being placed on us and we're the least able to accommodate that for we're the most overworked and the most sleep-deprived. Because of our workload pit, our ability to function as educators is limited. There's just too much work to do and not enough time and energy. When you're tired and overworked, the students are going to be the last ones to benefit from your time and energy."

•Being on call: "In this hospital, residents are on call every third night. So, it's hard to expect them to be enthusiastic the next day (about teaching MSs), when what they want is to get their work done and get some sleep."

•Implicit Rules of Educational Practice:

All residency-affiliated clinical sites must demonstrate--in words and in actions--equal commitments to their educational and patient services if they are sincere in playing prime roles (a) in the preparation of competent physicians, and (b) in serving patients with the best medical care possible.

All resident groups indicated that clinical teaching should be an integral part of work rounds. However, their collective experiences revealed that higher level residents (R2s to R4s) generally failed to routinely and effectively integrate teaching into the team's daily patient care activities. For the R1s, this problematic situation was due to: (a) the team's time constraints and volume of workload; (b) the senior residents' absence or lack of teaching experiences, expertise, and motivation, and (c) the lack of commitment of the clinical sites (private and military hospitals) to meet the educational goal of the residency program. For the other resident groups, their reasons also included: (a) inadequate formal orientations to senior residents' teaching roles; (b) lack of accessible positive role models from the attending level; (c) absence of formal teaching guidelines, and (d) lack of administrative support to attract and retain strong clinical educators from the chief residency and attending levels. Consequently, clinical teaching during work rounds tended to be informal, unplanned, inconsistently or minimally done, and at times, non-existent.

Personal dimension focuses on the impact of the residency training process on the residents' personal lives inside and outside of the medical arena. This encompasses the residents' (a) personal feelings of uncertainty in their own sense of credibility, and their lack of self-confidence as they confront and deal with the day-to-day demands of their responsibilities; (b) personal needs for respite and opportunities to lead normal lives outside of their

professional lives; (c) personal need to keep abreast with the current medical literature outside of work hours, and (d) personal approaches to best handle the demands and expectations of the medical world.

Table 6

The Personal Dimension

(1) Concern: Need to learn survival skills on-the-job. (R1s)

•Exemplars:
•Feelings of fear and frustrations about being R1s: "It's very scary to be an R1...so overwhelmed by scut work and so physically exhausted, but not the team leader (so), has no power to change anything...must learn how to get by to survive year...how to grin and bear it."

•Implicit Rules of Educational Practice:
R1s must learn survival skills in order to cope with the intense demands of their internship year.

---

(2) Concern: Feelings of frustrations/anxiety over lack of formal preparation to assume role. (R2s).

Exemplars:
•Lack of self-confidence in the ability and readiness to serve as team leaders: "didn't feel adequately prepared...was terrified to go from R1's role to being the leader...the complete change in level of responsibility without any significant change in level of knowledge is very frightening...feelings of sink or swim as an R1 still goes on as an R2...our preparation was the socialization process."

•Lack of self-confidence in the ability and readiness to function as clinical educators: "definitely felt not adequately prepared for teaching role as an R2...didn't feel to know enough to teach...felt a lot of discomfort about becoming an R2 (for) it's scary to teach...don't want to give the team wrong information...our preparation was the socialization process."

•Implicit Rules of Educational Practice:
Senior residents should be provided with adequate preparation that enables them to: (a) acquire a strong sense of clinical credibility, and (b) gain a high level of self-confidence in their abilities and feelings of readiness to lead and teach at the R2 level.

The R4s did not reveal a personal dimension of their beliefs. Due to their successful advancement in the program, a heightened sense of control, a strong sense of credibility and increased feelings of self-confidence about being chief residents, the R4s did not report concerns/rules that focused on their needs for: (a) survival skills to confront the demands of their transition process; (b) time for self-directed learning, and (c) a sense of credibility. At the R4 level, they also had considerably more time for family and friends, self-directed learning and respite. Like the other residents, however, they expressed disappointments about their lack of formal preparation for their clinical roles.

When taken together, the residents' clinical teaching-learning concerns proved to be one salient way to generate their implicit rules of educational practice. The pervasiveness of the generated rules across the four resident groups reflected agreement in many of their beliefs (52% of these rules were commonly identified by three to four

resident groups). See Appendix D. The data also showed that as the residency level advanced, there was a shift in the direction of the resident group's focus of concerns from self/task to learner impact/task. Both R3s and R4s tended to be more learner centered than the R1s/R2s who tended to be primarily self/task centered in their teaching role orientations and actions. These concerns had both affective and cognitive components, with self-related concerns being affective, and task and learner impact concerns being cognitive in nature. These findings are consistent with other investigators' work on teacher concerns which move from self and task to learner impact concerns as they gain experience (e.g., Fuller & Brown, 1975; Patanizek, 1978; Staton-Spicer & Bassett, 1979; Staton-Spicer & Darling, 1986). These findings suggest that as the residents became more experienced and confident about their teaching roles and behaviors, the focus of their concerns changed. Since the R1s were the novice medical interns while the R2s were the novice senior residents, they were more concerned about their own feelings of adequacy and credibility, mastery of new tasks, and survival in the program. Finally, the resident groups also showed differences in terms of the breadth and prioritization of their beliefs. In terms of the content and intent of their beliefs, the R3s and R4s presented more comprehensive explanations and more elaborate illustrative examples. Their verbal expressions were also more organized, sophisticated and were presented in longer statements and paragraphs rather than in mere phrases or short sentences. The data suggest that the R3s and R4s constructed verbal representations of their beliefs and actions that were more elaborate, integrative and qualitatively distinct from the R2s and R1s (particularly from the R1s). These findings are consistent with the results of previous research on expert-novice teachers (e.g., Calderhead, 1985; Berliner, 1986; Carter, 1986).

Primary Sources of Belief Systems

All resident groups attributed their beliefs to both formal (clinical training experiences) and informal sources (non-clinical training experiences e.g., experiences as a patient, family interactions). For them, these experiences directly impacted their conceptions of (a) their medical world (how it is and how it should be), and (b) the clinical roles that they must all play in the patient care setting (what they entail now and what they should be). All residents pointed to their junior year in medical school as the beginning of their apprenticeship process. It was the pivotal time when they were first formally introduced into the real world of medical practice--its good and bad role models, and the aphorisms or watchwords of medical training (e.g., see one-do one-teach one, pimping, scut work, hand-me-down process). As Conrad (1988) described this period in his own research , "In the third year, clinical training

begins in earnest. Students go through a series of hospital and clinic rotations or clerkships where they are exposed to medicine in practice and begin to learn the craft of doctoring". In the residents' words:

Table 7

Primary Sources of Medical Residents' Belief Systems and Actions

•R1s	"my third year in med school...when I started taking care of patients...and as an intern by getting into the real world."
•R2s	"the junior year exactly...in med school when I started my first patient contacts...then the fourth year, then as an R1, and now as an R2."
•R3s	"my chronicle years in med school...particularly the junior year...then, my on-going experiences as a resident."
•R4s	"my clinical rotations as a MS (last two years), then as an R1 to the present...from playing every role since the last two years of med school to my residency years."

Discussion and Implications

Each dimension of the residents' beliefs and actions was confirmed in the interview data. The residents' beliefs about their clinical teaching roles and their actual teaching behaviors during work rounds were consistent with the observations. Through a socialization process, which involved transition from one residency level to the next, each resident group was assigned membership into a subcultural group of physicians. Through this membership, each resident group shared a predetermined role status which provided them with the shared meanings that previous residents had assigned to each status. As defined by Merton, et. al., (1957), this is a process when "people selectively acquire the values, attitudes, interests, skills and knowledge--in short, the culture--current in groups to which they are, or seek to become a member" (p. 257). Each group, therefore, belonged to a unique cluster of physicians which held a similar organizational position within the medical hierarchy by virtue of their residency level in the program. Each group's role status served to provide its members with the opportunities to share similar, but not necessarily nor automatically identical personal experiences. These experiences were continually reflected upon, interpreted and assigned meanings based upon their self-reflections and social interactions with their important others. Together, these on-going interactions functioned to continually shape the multidimensional character of their beliefs and actions in the clinical setting.

Through this reflective process, the residents developed their perspectives on their clinical teaching roles during rounds, and the clinical teaching-learning process. These perspectives--which constituted the residents' beliefs

about their clinical roles on work rounds--served to guide their instructional decisions and actions as they strived to cope with the expectations of their medical world within the context of clinical teaching. Their own teaching behaviors, in turn, also served to influence their perspectives on the expectations of their clinical world.

In accordance with the findings of this study, I have constructed a heuristic model (Figure 1) that highlights the dynamic interconnections between (a) the residents' role status experiences and decisions/actions during work rounds; (b) the dimensions of their beliefs about their teaching roles, the whole clinical teaching-learning process and its interrelated components. This model shows how their respective role status provides them with daily clinical experiences throughout their medical tenure, serving as the primary sources of their beliefs and actions. These sources continually impact their constructions of reality as members of separate subgroups that belong to a whole social organization of teaching physicians.

The model also shows how all of these subsystems are parts of a whole cyclical process of renewal and adjustment (represented by the model's open exchange and feedback mechanisms). That is, as residents receive new information and carry out actions, they evaluate them as either functional or dysfunctional in relation to the whole system and to their own existence in the social organization of residents. As shown, the interaction between the residents' beliefs and actions within the dynamic world of medical practice is extremely complex. These complex interactions are cyclical and continual rather than linear and static. As they continue to actively engage in the socialization process of becoming physicians (by advancing from one role status to the next in the medical hierarchy), residents discover, learn and contribute to the shared meanings that are assigned to each role status. Hence, they build up a hierarchical network of beliefs which are constantly exposed to both new and old, and at times conflicting information. Through this process, their beliefs are being either reinforced or challenged resulting in pressures for them to make needed revisions, or to completely replace their conceptions of the issues in question. This indicates that residents are active agents in the initial construction and reconstruction of their social reality, rather than being merely passive recipients of information. As active agents, their beliefs continually impact their teaching decisions and actions , and their actions continually impact their beliefs in a cyclical way. That is, residents adjust their belief systems based on the perceived outcomes of their actions in the same way that they also adjust their actions based on their existing beliefs in order to make sense of their medical world.

This research has implications for residency training. First, residents would benefit from a well-planned orientation program at the beginning of each year of their training. This program would formally introduce them to their teaching roles responsibilities. Written guidelines on role expectations need to be explicitly articulated and clearly explained. Without a clear mutual understanding of their roles and responsibilities, confusion and frustrations ensue which can serve as barriers to the pleasures of teaching and learning.

Second, residents need formalized exposure to a variety of teaching strategies for clinical instruction. The greater their repertoire of teaching approaches, and the more competent and confident they are in using them, the more effective they can be as clinical educators. At the core of these teaching approaches is role modeling which remains at the heart of the apprenticeship model of the residency program. The fact that residents teach each other and learn from each other is evident in both interview and observational data. Hence, the program should be designed to emphasize the importance of role modeling in clinical education.

Third, the dimensions of the residents' beliefs and actions (patient care task, academic, social, contextual and personal) could serve as frames of reference in the design and organization of teaching effectiveness training for residents. For instance, the implementation of a sequential instruction of course content could be based on these dimensions which could take into consideration residents' respective role statuses in the program, and orientations toward their teaching roles (e.g., R1s and R2s' self/task orientation; R3s/R4s' learner impact/task orientation). This approach to curricular decisions would direct course content that residents' themselves would find relevant and useful to their immediate training concerns and interests (Popham & Baker, 1970; Staton-Spicer & Bassett, 1979).

Finally, the residents consistently attributed their beliefs to their experiences. However, results of this study also revealed that mislearning from experience could also occur. Other research demonstrated this as well (e. g., Feiman--Nemser & Buchanan, 1985; Grossman, 1988). Experience does not automatically ensure expertise. It has the potential to provide meaningful learning opportunities in the same way that it has the potential to serve as a barrier to learning. For instance, five residents in this study consciously or subconsciously avoided using questioning as a teaching strategy. This was due to their negative experiences in the past, particularly during their clerkships and internship, when they were exposed to the "pimping" way of being asked questions by some senior residents and attendings. They believed that its intent was to intimidate and humiliate the recipient of the questions thereby serving the inquirer's "power ego". When appropriately and effectively used, however, questioning can assess

the learner's fund of knowledge and level of learning motivation . In another example, eight out of 14 residents admitted feeling extremely incompetent and uncomfortable about their bedside teaching skills and/or physical examination skills. They claimed that their inadequacies in these areas were due to the fact they were taught by clinical educators who lacked the necessary skills themselves and the experience to teach these skills to others. While some residents had directly observed some senior level residents and attendings demonstrate these skills to them, they claimed that these past experiences failed to provide them with adequate opportunities to practice these skills in the clinical setting. Consequently, many residents continue to feel unprepared to teach medical students and/or interns how to do effective and efficient bedside teaching and/or physical examinations. These examples highlight the fact that mislearning from experience can be continually passed on from the educator to the learner. As some of these residents reported, it is a "vicious cycle of passing on to others their inexperience and bad habits...it's like the blind leading the blind." This finding stresses the importance of assessing teaching-learning experiences not only in terms of quantity, but most importantly in terms of the quality of these experiences. As Berliner (1986) stated, "experience is a necessary but not a sufficient condition for being an expert."

This study raised interesting possibilities for future research. First, in adherence to the intent of the qualitative case study methodology, it would be valuable to replicate this investigation and test my conceptual model of resident belief systems and actions in the context of other medical specialities, other clinical settings and geographic locations. Second, commonalities and differences between novices and more experienced residents in terms of their orientations toward clinical teaching, team leadership, physician-patient relationships and coping/problem-solving orientations should be further explored. Third, further research that focuses on the clinical educator as a role model is warranted. It would be beneficial to systematically determine how role models shape the belief systems of learners, and what specific modeling behaviors do effective clinical educators employ to model the processes of: integrating patient care delivery with clinical teaching or team leadership with clinical teaching, strengthening physician-patient relationships, and using clinical teaching approaches (from questioning to giving feedback). Findings from these research efforts would be useful to faculty development and residency program planners who work towards the improvement of the apprenticeship paradigm of preparing future physicians.

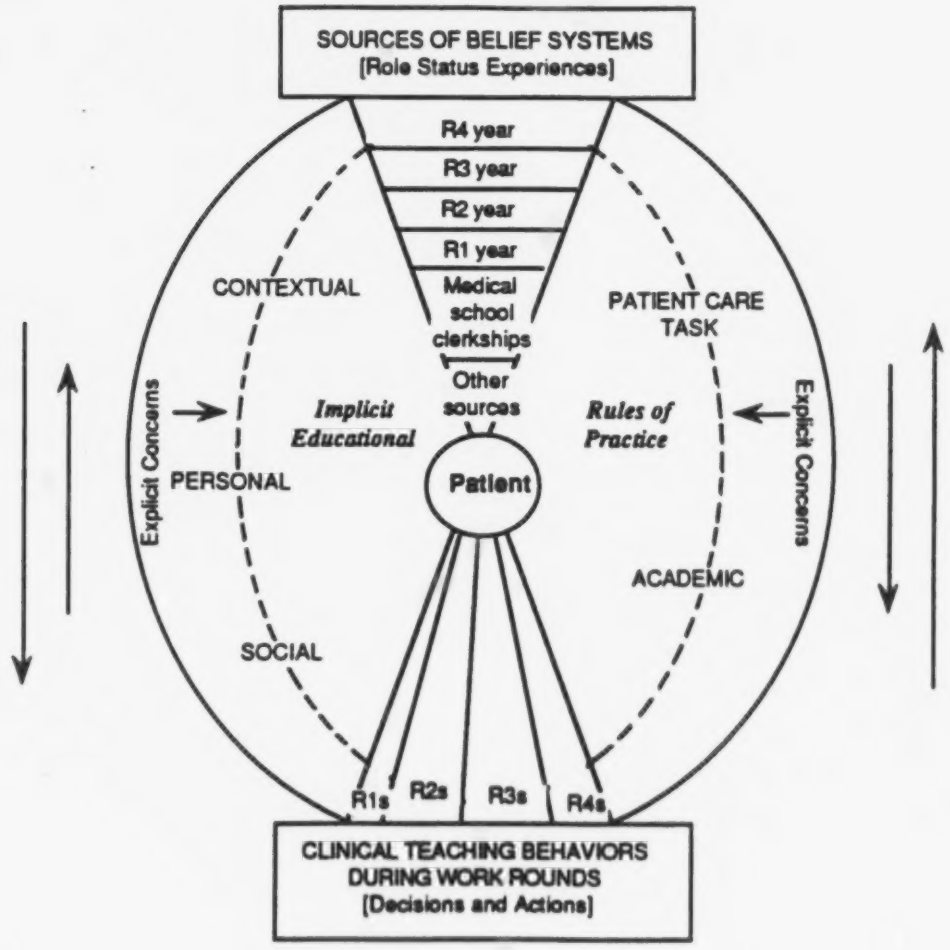
There are at least three limitations of this study. First, the data collected were based on self-reports of 14 individuals, and observations of four of them. Hence, the findings of this study cannot be generalized to all residents

in internal medicine. However, generalizations can be made to theoretical propositions (Yin, 1984; Lincoln & Guba, 1985). Strategies were used in my attempt to reduce the risks of generalizing findings inappropriately by increasing the number of cases rather than just one or two; by purposefully selecting contrasting cases; by systematically sorting cases, and by using random sampling (Miles & Huberman, 1984). Second, all 14 cases were members of a volunteer sample pool. As volunteers, it is possible that they might have presented their ideal self (Goetz & LeCompte, 1984), or they might have been more committed to the improvement of clinical education than non-volunteers. Specific strategies were used in my attempt to counteract or minimize these threats such as using random sampling, and providing the cases with assurances of confidentiality. Finally, as the sole researcher in the study who had to engage in active listening, careful watching and rapid data recording, it was possible that my own perspectives or preconceptions (as a clinical educator myself) may have infiltrated the findings. Specific strategies, as suggested by qualitative scholars (e.g., Spradley, 1979, 1980; Guba & Lincoln, 1981), were used in my attempts to anticipate complications and counteract or minimize possible threats. These included: using informants (other than the subjects), member checks, debriefing, persistent observation and prolonged engagement strategies.

Conclusion

Results of this study showed that medical residents approach each level of their medical training process with beliefs about their clinical teaching roles during work rounds. Their beliefs and actions are constantly being reinforced or challenged, and reconstructed through a complex process of self-reflection and social interaction. The residents' construction of their social reality, which gives rise to their concerns and implicit rules of educational practice, guides and regulates their teaching behaviors in the clinical arena. Through this interactive process, a reciprocal relationship exists between their beliefs and actions.

Figure 1. A Conceptual Model of the Residents' Beliefs and Actions Related to Clinical Teaching during Work Rounds



SELECTED REFERENCES

Ajzen, I., & Fishbein, M (1980). Understanding attitudes and predicting social behavior. New Jersey: Prentice-Hall.

Becker, H.S., Geer, B., Hughes, E. C., & Strauss, A. L. (1961). Boys in white: Student culture in medical school. Chicago: University of Chicago Press.

Becker, H. S. (1954). Field notes and techniques: A note on interviewing tactics. Human Organization, 12 (4), 31-32.

Beail, N. (1985). Repertory grid technique and personal constructs: Applications in clinical and educational settings. Cambridge, MA: Brookline Books.

Blumer, H. (1969). Symbolic interactionism: Perspective and method. New Jersey: Prentice-Hall.

Borg, W. R. & Gall, M.D. (1983). Educational research : An introduction (4th.ed.). New York: Longman.

Douglas, J. (1976). Investigative social research. Beverly Hills, CA: Sage.

Edwards, J. C., Kissling, G. E., Plauche, W. C., & Marier, R. L. (1986). Long-term evaluation of training residents in clinical teaching skills. Journal of Medical Education, 61, 967-970.

Edwards, J. C., & Marier, R. L. (Eds.), (1988). Clinical teaching for medical residents: Roles, techniques, and programs. New York: Springer.

Feiman-Nemser, S. & Buchman, M. (1985). Pitfalls of experience in teacher preparation. Teachers College Record, 87 (1), 53-65.

Fenstermacher, G. D. (1979). A philosophical consideration of recent research on teacher effectiveness. In L. S. Shulman (Ed.), Review of research in education (pp. 157-185). Ithaca, IL: F. E. Peacock.

Fenstermacher, G. D. (1980c). What needs to be known about what teachers need to know? In G. E. Hall, S. M. Hord, & G. Brown (Eds.), Exploring issues in teacher education: Questions for future research. Austin, TX: Research and Development Center for Teacher Education.

Fenstermacher, G. (1986). Philosophy of research on teaching: Three aspects. In M. C. Wittrock (Ed.), Handbook of research on teaching. New York,: Macmillan.

Ferguson, G. A. (1971). Statistical analysis in psychology and education. New York, NY: McGraw Hill Book Co.

Fuller, F. F. & Boun, O. (1975). Becoming a teacher. In the National Society for the Study of Education (Ed.), Seventy-fourth yearbook of the national society for the study of education. Chicago: The National Society for the Study of Education.

Goetz, J.P., & Le Compte, M.D. (1981). Ethnographic research and the problem of data reduction. Anthropology and Education Quarterly, 12, 51-70.

Goetz, J.P., & Le Compte, M.D. (1984). Ethnography and qualitative design in educational research. Orlando, FL: Academic Press.

Greenberg, L., Goldbert, R., & Jewett, L. (1984). Teaching in the clinical setting: Factors influencing residents' perceptions, confidence, and behavior, Medical Education, 18, 360-363.

Grossman, P. (1988). A study in contrast: Sources of Pedagogical content knowledge for secondary English. Unpublished doctoral dissertation, Stanford University, CA.

Guba, E. G. and Lincoln, Y. S. (1980). The distinction between merit and worth in evaluation. Educational Evaluation and Policy Analysis, 2, 61-71.

Guba, E. G.and Lincoln, Y. S. (1981). Effective evaluation. San Francisco, CA: Jossey-Bass.

Hammill, P. (1987). The function of children's play in the development of ethnic identity. Unpublished doctoral dissertation, University of Washington, Seattle, WA.

Honess, T. (1985). Repertory grids and the psychological case study. In N. Beail (Ed.), Repertory grid technique and personal constructs (pp.243-255). Cambridge, MA: Brookline Books.

Honigman, J. J. (1970). Sampling in ethnographic field work. In R. Naroll and R. Cohen, (Eds.). A handbook of method in cultural anthropology. Garden City, NY: Natural History Press.

Irby, D. M. (1978). Clinical teacher effectiveness in medicine. Journal of Medical Education, 53, 808-815.

Irby, D. (1978b). Clinical faculty development, In L. E. Ford (ed.) Clinical education for the allied health professions (pp. 95-105). St. Louis, Missouri: Mosby.

Irby, D. M. (1986). Clinical teaching and the clinical teacher. Journal of Medical Education, 61: (Part 2), 5-45.

Kelly, G. A. (1955). The psychology of personal constructs. New York: Norton.

Littlemeyer, M. H., & Davis, F. D. (Eds.).(1984). Physicians for the twenty-first century: Report of the project panel (Special issue). Journal of Medical Education, 59.

Louis Harris and Associates. (1984). Report of the Louis Harris and associates: Survey on the status of medical education. In J. V. Warren G. L. Trzebiatouski, & D. N. Plumb (Eds.), Medical education for the twenty-first century. Proceedings of a Sesquicentennial Conference (pp. 193-200). OH: Ohio State University College of Medicine.

Lutwama, J. (Chairman). (1973). Training and preparation of teachers for schools of medicine and of allied health sciences. Report of a World Health Organization Study Group. Geneva, Switzerland: World Health Organization.

McCracken, G. (1988). The long interview. Qualitative research methods, V.13. Beverly Hills: Sage Publications.

Mead, G. H. (1934). Mind, self, and society. Chicago: University of Chicago Press.

Merton, R., Reader, G. & Kendall, P. (1957). The student physician. Cambridge: Harvard University Press.

Miles, M. B., & Huberman, A. M. (1985). Qualitative data analysis: A source book of new methods. Beverly Hills: Sage.

Muller, S. (Chairman). (1984). Physicians for the twenty-first century. Report of the Panel on the General Professional Education of the Physician and College Preparation for Medicine. Journal of Medical education, 59: Part 2.

Munby, H. (1982). The place of teachers' beliefs on research thinking and decision making, and on alternative methodology. Instructional Science, 11, 201-225.

Munby, H. (1984). A qualitative approach to the study of teacher's beliefs. Journal of Research in Science Teaching, 21 (1), 27-38.

Nisbett, R. E., & Ross, L. (1980). Human inference: Strategies and shortcomings of

Pataniczek, D. A. (1978). A descriptive study of the concerns of first-year teachers who are graduates of the Secondary Education Pilot Program at Michigan State University. Unpublished doctoral dissertation, Michigan State University.

Pataniczek, D. & Isaacson, N. S. (1981). The relationship of socialization and the concerns of beginning secondary teachers. The Journal of Teacher Education, 32, 14-17.

Philipsen, G. (1982). T he qualitative case study as a strategy in communication inquiry. The Communicator, 12, 4-12.

Popham, J. & Baker, E. (1970). Systematic instruction. New Jersey: Prentice-Hall.

Spradley, J. P. (1979). The ethnographic interview. New York, NY: Holt, Rinehart & Winston.

Spradley, J. P. (1980). Participant observation. New York, NY: Holt, Rinehart & Winston.

Staton-Spicer, A. & Bassett, R. (1978). An investigation of the communication concerns of preservice and inservice elementary school teachers: A developmental conceptualization. Paper presented at the annual convention of the Speech Communication Association, Minn., MN.

Staton-Spicer, A. & Bassett, R. (1979). Communication concerns of preservice and inservice elementary school teachers. Human Communication Research, 5 (2), 139-146.

Staton-Spicer, A. & Darling, A. (1986). Communication in the socialization of preservice teachers. Communication Education, 35, 215-230.

Stritter, F. T., & Flair, M. D., (1980). Effective clinical teaching. (PB81-162794). MD: National Medical Audiovisual Center.

Stritter, F. T., Hain, J. D., & Grimes, D. A. Clinical teaching reexamined. Journal of Medical Education, 50, 876-882.

Shulman, L. S. (1986). Paradigms and research programs in the study of teaching: A contemporary perspective. In M. C. Wittrock (Ed.), Handbook of research on.

Tonesk, X. (1979). The house officer as a teacher: What schools expect and measure. Journal of Medical Education, 54, 613-616.

Tremonti, L. P., & Biddle, W. B. (1982). Teaching behaviors of residents and faculty members. Journal of Medical Education, 57, 854-859.

Tuckman, B. W. (1978). Conducting educational research. (2nd.ed.) NY: Harcourt Brace Jovanovich, Inc.

Valerio, N. L. (1991). Medical residents' belief systems about their clinical teaching role and these systems' relationships to their clinical teaching behaviors: A qualitative inquiry. (Doctoral dissertation). Seattle: University of Washington.

Wehling, L. J. & Charters, W. W., Jr. (1969). Dimensions of teacher beliefs about the teaching process. American Educational Research Journal, 6, 7-30.

Weinholtz, D. (1981). A study of instructional leadership during medical attending rounds. (Doctoral dissertation). Chapel Hill: University of North Carolina.

Weinholtz, D. (1988). How clinical teaching is studied. In Edwards, J.C. & Marier, R.L. (Eds.). Clinical teaching for medical residents: roles, techniques, and programs. (pp. 129-154). New York: Springer Pub. Co.

Wilkerson, L., Lesky, l., & Medio, F. J. (1986). The resident as teacher during work rounds. Journal of Medical Education, 61, 823-829.

Yin, R. K. (1984). Case study research: Design and methods. Beverly Hill: Sage.

Zurcher, L. A. (1983). Social roles: Conformity, conflict, and creativity. Beverly Hills: Sage.

APPENDIX A

A RESIDENT'S (R3-B) COMPLETED REPERTORY GRID: AN ILLUSTRATION

ID: 020

R.I.(EXPLORATORY GRID TECHNIQUE) RATING SCALE

3 = Definitely Associated

2 = Neutral

1 = Definitely Not Associated

ELEMENT AXIS	CONSTRUCT AXIS	1. Organizational Process	2. To Do Patient Education, As Well	3. To Look For Changes In Clinical Status	4. Educational Contract For R_{1B} & MS_3	5. Insurance & Financial Options	6. Time To Do Short Work-Ups (Screening Labs, Basic Studies)	7. To Take Notion Of Future Problems & Diagnoses	8. To Involve Other Personnel	9. Time To Do "Short Work-Ups"	10. To Give MS_3 & R_{1A} Short Teaching Points	11. To Give R_{1B} Advice To Further Work-Up Patients	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. R_3 READS ABOUT MEDICAL PROBLEMS / GO TO LIBRARY (IF UNUSUAL PROBLEM) MIGHT BEFORE WORK ROUNDS		2	3	1	3	3	3	3	1	1	3	1									
2. R_3 GATHERS GROUP AT 8:00 AM IN ICU		3	2	3	3	3	3	3	3	1	1	1									
3. TEAM STARTS ROUNDS WITH "SICKEST" PATIENTS		3	2	3	3	3	3	2	3	1	3	2									
4. PRIMARY CARE PERSON (R_1 OR MS_3) INTRODUCES PATIENT & SUMMARIZES EVENTS FROM PREVIOUS NIGHT		3	3	3	3	3	2	3	3	1	2	2									
5. TEAM DEVELOPS PLAN FOR PATIENT FOR ENTIRE DAY		2	2	3	3	3	2	3	3	1	3	2									
6. WE DO DIRECTED (FOCUSED) PHYSICAL EXAM OF PATIENT		3	1	3	3	3	3	2	3	1	1	1									
7. WE LEAVE PATIENTS ROOM TO DISCUSS PATIENT PROBLEMS & MANAGEMENT STYLES		2	1	2	3	3	3	3	3	1	3	1									
8. WE MIGHT LOOK AT CHEST X-RAY OR EKGs OR LAB VALUES		3	1	3	3	3	3	2	3	2	3	1									
9. R_3 MAY SHARE A SALIENT TEACHING POINT WITH EVERYBODY, AS SOMETHING READ IN THE LITERATURE		2	2	2	3	3	3	3	2	1	1	1									
10. R_3 MAY ASK MS_3 QUESTIONS ABOUT PATHOPHYSIOLOGY		1	1	1	3	3	3	3	2	1	3	1									
11. WE MOVE ON TO NEXT PATIENT & BASICALLY REPEAT THE ROUTINE		2	2	3	3	3	3	3	3	1	3	1									
12. R_3 TRIES TO MAKE OPPORTUNITY FOR ORIGINAL / NON-THREATENING TEACHING SITUATION		2	2	2	3	3	3	3	2	1	3	1									
13. OCCASIONAL INTERRUPTIONS OCCUR		2	2	2	3	2	2	1	2	3	3	3									
14. IF CROSS-PASSING WITH ATTENDINGS, THEY MIGHT INTERJECT (NOT THE MAJORITY OF TIME)		2	3	3	3	3	3	3	3	1	2	1									
15. R_3 GOES TO RESIDENTS' BREAK AT 9:30 A.M.		3	1	1	1	3	3	3	3	1	3	3									
16. R_{1B} CONTINUE TO ORDER NEW TESTS FOR DAY		3	3	3	2	3	3	3	3	3	3	3									
17. R_{1B} REVIEW LAB DATA OR DIAGNOSTIC TESTS FROM PREVIOUS DAY.		3	3	3	3	3	3	2	3	3	3	3									
18. R_{1A} WRITE PROGRESS NOTES.		2	2	3	3	3	3	3	3	3	3	3									
19. MS_3 WORK IN CONJUNCTION WITH R_{1B}		3	3	3	3	3	2	1	3	3	3	3									
20. R_1 CO-SIGNS MS_3'S PROGRESS NOTES / ORDERS		2	2	3	3	3	3	1	3	3	3	3									

APPENDIX B

Extracted Factors from a Resident's (R3-B) Repertory Grid and Percent of Variance per Factor: An Illustration

Factor Loadings		Extracted Factors	Pct. of Variance
	Factor 1:	*Clinical assessment and management.*	30.0%
(0.76)	V 1 =	Organizational process	
(0.84)	V 3 =	To look for changes in clinical status	
(0.89	V 8 =	To double-check if patient is getting better or worse	
	Factor 2:	*Interns/Medical students' independence time.*	20.2%
(0.79)	V 9 =	Time to do scut work	
(0.782	V 10 =	To give students and interns time to think through patients' medical problems	
(0.71)	V 11 =	To give interns the chance to function as teachers for the medical students (senior residents at Residents' Report)	
	Factor 3:	*Discussion of patient care management styles.*	15.3%
(0.85)	V 5 =	Diagnostic and therapeutic options	
(0.72)	V 6 =	Time to seek out students' sophistication level on clinical problem	
0.65)	V 7 =	To take position of devil's advocate to generate management discussion	
	Factor 4:	*Clinical teaching--role modeling (clinical heroes).*	9.8%
(0.96)	V 4 =	Educational category for interns and students	
	Factor 5:	*Patient education.*	9.1%
(0.95)	V 2 =	To do patient education as well	

Note. The factor loadings are rounded off to two decimal places.
V=means variable.

In accordance to the factor analysis results, R3-B's variables (constructs) clustered into five categories (factors). These factors represent his personal understandings of his clinical teaching role and clinical teaching within the context of work rounds. See my dissertation for an in-depth discussion of each factor and the interrelationships between these five factors.

APPENDIX C

Extracted Factors Representing Residents' Overarching Conceptions of the Relationships between their Elements (actions) and Constructs (meanings of actions)

R1-A	1. Maximum boredom equals seeing patients not your own. 2. Dichotomy between the mood and business of work rounds. 3. Exercise in power! 4. R2 is in charge! 5. Flow of team is interrupted by core activities.	**R1-B**	1. Direct patient care. 2. Physical labor. 3. Teaching (is R2's role).
R1-C	1. Providing and advancing good medical care.	**R1-D**	1. Idealistic versus realistic worlds of medicine. 2. Interpersonal interactions
R2-A	1. Teaching and learning to take care of patients. 2. Team morale and team spirit. 3. Patient as active participant in own care. 4. Connecting acts. 5. Medical students as case presenters.	**R2-B**	1. Information-exchange. 2. Nurture self-and-team motivation. 3. Leadership as a two-way street. 4. Pleasure of doctor-patient relationship.
R2-C	1. Sink or swim period of transition. 2. Intentional aspects of rounds. 3. Interpersonal aspects of rounds. 4. Learning from each other by example.	**R2-D**	1. Communication between team members. 2. Communication with patient. 3. Practical aspects of job.
R3-A	1. My leadership style. 2. My high expectations. 3. Self-image and respect.	**R3-B**	1. Clinical assessment and management. 2. Interns' and medical students' independence time. 3. Discussions of patient care management styles. 4. Clinical teaching-role modeling (clinical heroes). 5. Patient education.
R3-C	1. Maximization of teaching opportunities. 2. On-the-job training on provision of patient service. 3. Show and tell. 4. Hierarchy of sophistication: teaching at different levels. 5. Breakdown barriers between educator and students.	**R3-D**	1. Communication. 2. Touching and observation. 3. Scut work. 4. Transition to physicianhood. 5. The art of physicianhood.
R4-A	1. Learning requires feedback and delegation of responsibilities for providing patient care and teaching. 2. Skills of clinical decision-making. 3. Rounds enable team to plan for the day.	**R4-B**	1. My "chief resident" relationship to R1s and MSs. 2. Team leadership. 3. Relationship of higher level to lower level in medical hierarchy.

APPENDIX D

Dimensions of Belief Systems and Actions, and Implicit Rules of Educational Practice by Resident Group

Rules by Dimension	R1s (n=4)	R2s (n=4)	R3s (n=4)	R4s (n=2)
Patient Care Task Dimension (4)				
• Role delineation and clarification	X	X	X	X
• Task efficiency and effectiveness	X	X	X	X
• Role modeling leadership skills	X	X	X	
• Role modeling caring attitude				X
Academic Dimension (11)				
• Learner autonomy	X	X	X	X
• Clinical reasoning process	X			
• Medical knowledge and self-confidence	X	X		
• Teaching motivation		X		
• Dual role integration		X		
• Role modeling clinical teaching skills, attitudes and behaviors	X	X	X	X
• Clinical teaching approaches		X	X	X
• Learner diversity			X	X
• Learner task integration and synchronization			X	X
• Learner performance evaluation		X		X
• Residency program's role	X	X	X	X
Social Dimension (2)				
• Role modeling patient-centered orientation	X	X	X	X
• Working-teaching-learning arena	X	X	X	X
Contextual Dimension (1)				
• Educational goal commitment	X	X	X	X
Personal Dimension (3)				
• Self-directed learning	X	X	X	
• Transition process	X	X	X	
• Survival skills	X	X		